



Minnesota Public Utilities Commission



Time-of-use rates for rate-regulated utilities in Minnesota



PUC Docket Number: 08-948



April 5, 2013

Public Utilities Commission

- Regulate
 - Local and in-state long distance telephone companies
 - Investor-owned electric and natural gas utilities
 - Permitting for power plants, pipelines, transmission lines
- 5 Commissioners
 - Appointed by the Governor
 - Serve staggered terms
 - FT employment
- 56 staff

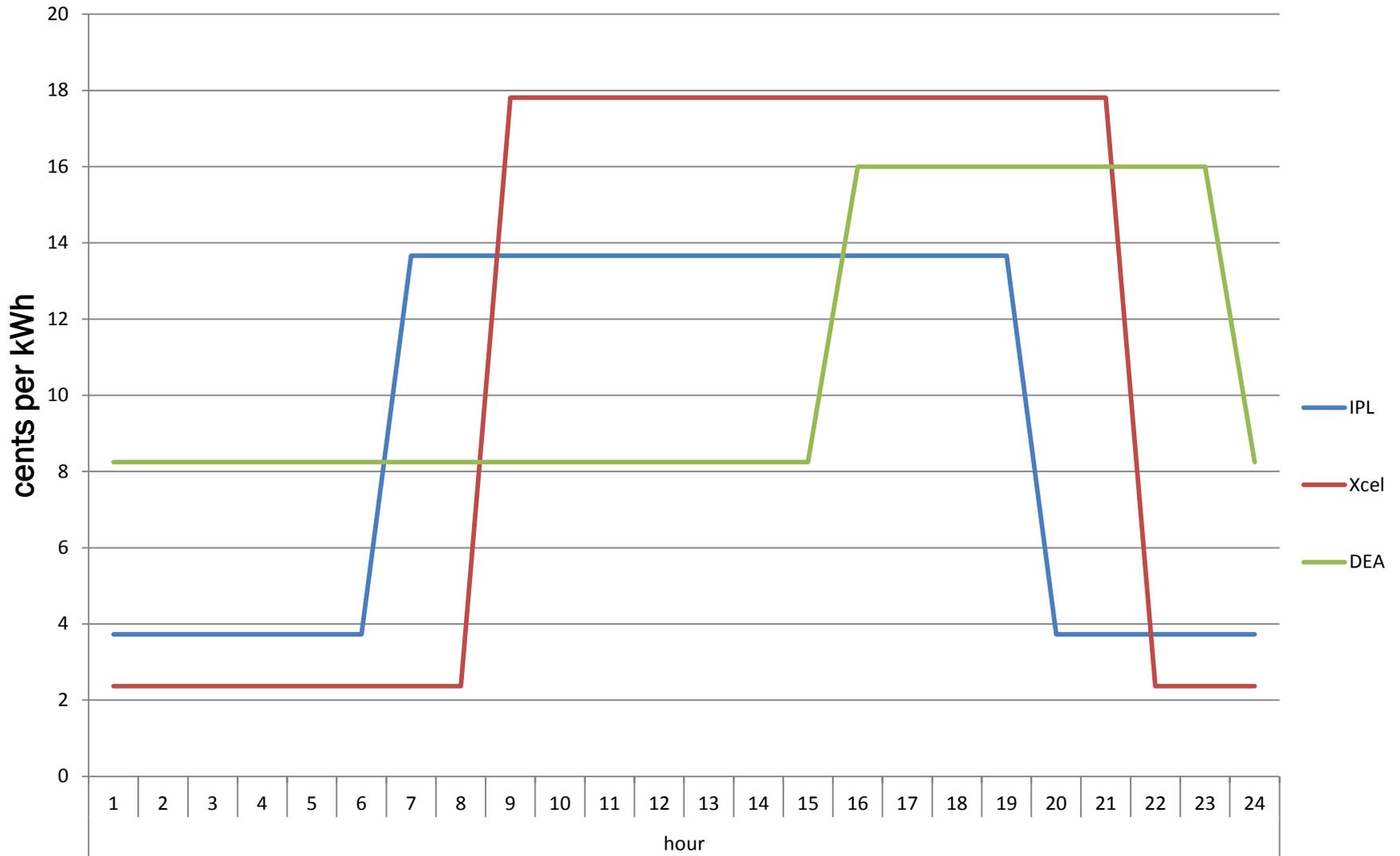
Informational Disclaimer

- Material in this presentation derived almost exclusively from the utilities' annual smart grid filings
- Filings can be accessed in e-dockets via Docket # 08-948

Takeaways

- In terms of rates available with a time-varying component...
 - Most TOU rates in Minnesota are utilized by nonresidential customers.
 - There is much more participation in interruptible programs, such as DLC (e.g. Savers Switch), than TOU rates
 - On-peak periods for TOU rates typically range from 7-14 hours
- Many TOU rates among rate-regulated utilities were implemented in the 1980s and 1990s
- Nationally, 2-3 tiered TOU rates are very common; however, critical peak pricing is mostly in the pilot phase

Optional residential TOU rates



Minnesota TOU rates, before 2006

- Time varying rates for Minnesota's rate regulated utilities originated out of the 1978 PURPA act. After they were created, they were reviewed and updated in rate cases.
- In 2001, the Commission explored a mandatory TOU rate for Xcel's residential customers, in Docket 01-1024.

Minnesota TOU rates, 2006 - present

- In 2006, Docket 06-159, the Commission opened a generic docket to review smart meters and time varying rates, among other issues. After a year-long proceeding, the Commission issued an order finding that it would continue to review time-varying rates based on utilities' individual circumstances, generally in rate cases.
- In OTP's 2007 rate case, Docket E017/GR-07-1178, staff raised this issue during the completeness review of the rate case and suggested additional testimony be filed on OTP's time-varying rates. The Commission adopted staff's suggestion.
- In general, parties have not used the Commission's standing order from 06-159 to request reviews of time-varying rates in rate cases, but it is available. However, TOU rates have been reviewed and updated in rate cases.

Examples from MN rate-regulated utilities

Examples from recent rate cases

- In IPL's last electric rate case (Docket #10-276), the Commission approved rate design modifications in IPL's TOU and interruptible rates.
 - Modifications in the TOU rates include more hours off-peak, and lower off-peak kWh charges
- MP developed a new TOU offering in 2011 for its Large Light & Power customers as a result of its last rate case.

Xcel Energy

- Residential Time-of-Day Rate
 - Started in 1980
 - Typically reduces electric bills for customers that use at least 650 kWh/month, and that have electric heat or water heating or other major loads that can be shifted off-peak.
 - To experience savings on this rate option, customers must shift approximately 65 percent or more of their overall electric usage to nights and weekends.

Otter Tail Power

- Otter Tail’s definition of time-varying rates includes:

“any tariff that charges a customer based on when electricity is used and or controlled.”

<i>TOU Rate</i>	<i># of meters</i>	<i>Year started</i>
Commercial TOU	42	1981
Large General Service	31	1993
Standby Service	1	1994
Irrigation Service	218	1978
RTP rider	1	1996
Fixed Time of Service	1,139	1987

Participation

<i>TOU Rate</i>	<i># of meters</i>
Dakota Electric	
Residential TOU	19
General service	8
IPL	
Residential TOU	9
General service TOU	2
Otter Tail	
General service	42
Large gen. service	31
Xcel	
Residential TOU	343
Business (< 25 kw)	9,766
General service (>25 kW)	3,320

MP critical peak pricing pilot

- Customers will be billed at the Residential rate, plus the following energy charge adjustments:

	<u>Energy Charge Adjustment</u>
All Off-Peak kWh	-2.990¢/kWh
All On-Peak kWh	1.415¢/kWh
Critical Peak Pricing kWh	77.000¢/kWh

- The “critical peak” component:
 - includes a maximum of 160 hours per year, and
 - applies only to noon-3 p.m. in the summer and 5-8 p.m. in the winter
- Other Notes
 - Approved by the Commission (with modifications and compliance filing requirements) on November 30, 2012 in Docket No. 12-233.
 - MP received an ARRA grant to develop this pilot.

National Scope of Smart Grid & TOU Rates

ARRA Smart Grid Investment Grant (SGIG)

- SGIG program involves 99 “smart grid” projects in the transmission, distribution, advanced metering, and customer systems areas
 - 62 demand-side projects to evaluate
 1. “customer acceptance (e.g., the role of information and education),
 2. customer retention (e.g., the role of alternative program designs), and
 3. customer response (e.g., the role of alternative rate designs).”
- Collectively, these projects offered time-based rates to about 7,000 customers, and each had the primary objective of reducing electricity consumption during peak periods.

ARRA Smart Grid Investment Grant – TOU Rates

- Time-based rates evaluated in SGIG projects include:
 - Time-of-use (TOU) rates
 - Broad blocks of hours
 - Price for each period is predetermined and constant.
 - Incentives for load shifting
 - Variable peak pricing (VPP)
 - Hybrid of TOU rate and real-time pricing
 - VPP rates have a dual purpose: load shifting and alleviating system emergencies
 - Critical peak pricing (CPP)
 - High wholesale market prices or power system emergency conditions are anticipated
 - Fewer on-peak hours, but higher price
 - Critical peak rebates (CPR)
 - Customer is refunded at a single, predetermined value for any reduction in consumption relative to what the utility deemed the customer was expected to consume
- TOU rate not evaluated in the SGIG projects
 - Real-time pricing (RTP)
 - Prices differ on an hourly basis
 - None of the SGIG demand-side projects are offering RTP programs.

of TOU pilots in SGIIG Program

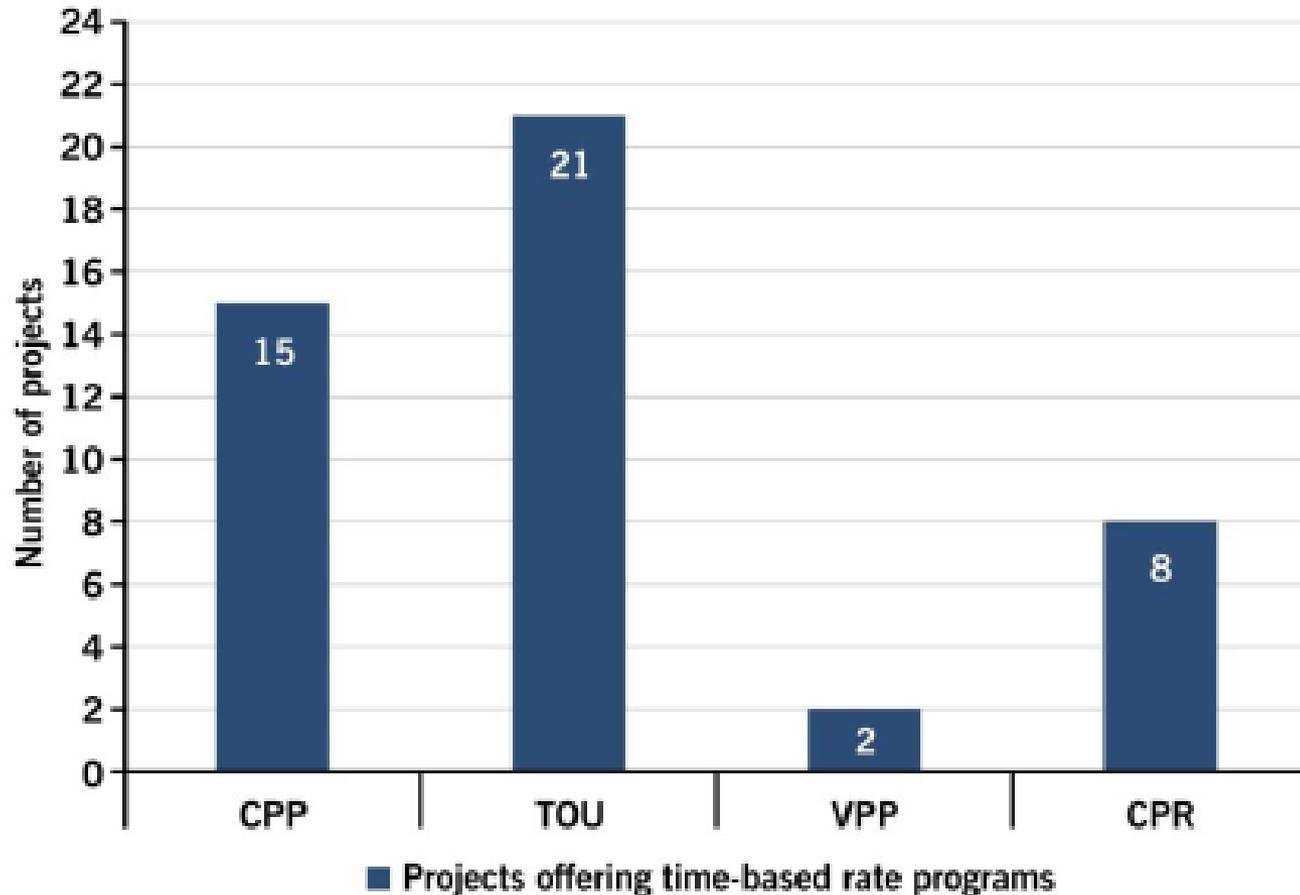


Figure 8. Types of Time-Based Rate Programs as of June 30, 2012

	Nevada Energy (Northern)	Nevada Energy (Southern)	Oklahoma Gas & Electric	Marblehead Municipal Light District	Central Vermont Public Service	Vermont Electric Power	Minnesota Power	FirstEnergy Service	Sacramento Municipal Utility District	Detroit Edison Company	Lakeland Electric	Total
Rate Treatments												
TOU	■	■							■		■	4
CPP	■	■	■	■	■		■		■	■		8
CPR					■			■				2
VPP			■			■						2
Non-rate Treatments												
Education	■	■										2
Customer Service						■						1
IHD	■	■	■		■	■	■	■	■	■		9
PCT	■	■	■					■		■		5
DLC								■				1
Features												
Bill Protector	■	■	■	■							■	5
Experimental Design												
Opt In	■	■	■	■	■	■	■		■	■	■	10
Opt Out								■	■		■	3
Number of Participants	9,509	6,853	3,196	500	3,735	6,440	4,025	5,000	97,480	3,075	3,000	142,813
Legend												
TOU	Time of Use											
CPP	Critical Peak Pricing											
CPR	Critical Peak Rebates											
VPP	Variable Peak Pricing											
IHD	In-Home Display											
PCT	Programmable Communicating Thermostats											
DLC	Direct Load Control											

Table 2. SGIG Consumer Behavior Studies

Next Steps

From the DOE December 2012 SGIG report:

- “Going forward, projects will ultimately have important lessons-learned
- Qualitative information will also be analyzed to identify best practices
- Several more utilities will be reporting on their programs as the projects develop
- Analysis of factors that influence customer acceptance, customer retention and customer response is ongoing”

Questions & Comments

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